SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-40

Name: New Wall Lake County: Pennington
Legal description: T 1 S, R 15 E; Sec 1-2, 11-12
Location from nearest town: 1.5 mi. S and 1.5 mi. W of Wall, SD
Dates of present survey: October 16, 2007
Date last surveyed: June 20-22, 2006; October 18, 2006
Most recent lake management plan: F21-R-32 Date: 1998
Management classification: Warm water permanent
Contour mapped: Date 1985

Primary Species: (game and forage)	Secondary and other species:
1. Largemouth bass	1. White crappie
2. Bluegill	2. Black bullhead
3.	3. Yellow perch
4.	4. Northern Pike
5.	5. Walleye
6.	6. White sucker

PHYSICAL CHARACTERISTICS

Surface Area: 42 acres; Watershed: 3,780 acres
Maximum depth: 24 feet; Mean depth: 12.9 feet
Lake elevation at survey (from known benchmark): - 7 feet

1. Describe ownership of lake and adjacent lakeshore property:

New Wall Dam was built by and is maintained by the South Dakota Department of Game, Fish and Parks.

2. Describe watershed condition and percentages of land use:

The ownership of the watershed of New Wall Dam consists of: 10% state, 50% private, and 40% federal. Of the total 3,780 acres, 40% are agricultural (winter wheat) and 60% are short grass prairie.

3. Describe aquatic vegetative condition:

Low water has left some cattails out of the water, but on the steeper gradients some still enter the lake. Submergent vegetation is plentiful in the shallow, upper ends of the lake in water under five feet.

4. Describe pollution problems:

No pollution problems were identified by departmental personnel during the 2007 survey.

5. Describe condition of all structures, i.e. spillway, level regulators, boat ramps, etc.:

All structures associated with New Wall Dam are in good condition. The boat ramp is situated at the bottom of a steep hill and needs periodic maintenance.

BIOLOGICAL DATA

Methods

Night electrofishing was conducted at New Wall on October 16, 2007, conductivity was 733 uhmos with a water temp of 53.5 degrees Farenheit. Electrofishing was conducted using a Smith-Root unit with pulsed-DC. Three, 10-minute sights were completed during the survey. All largemouth bass were collected, measured for total length (TL; mm) and weighed (g). In addition, scale samples were collected from up to 5 fish per centimeter group for age and growth analysis. All data was entered into WinFin 2.95 (Francis 1999).

Fish population parameters, confidence intervals and standard errors were computed using WinFin Analysis (Francis 2000). Parameters calculated were catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr) based on length categories. Abundance was expressed as the mean catch per unit effort (CPUE; mean number per net night or mean number per hour of electrofishing). Actual pedal time (time the electrofishing unit produced current) was recorded from the digital display on the Smith-root control box and used to calculate electrofishing CPUE. Population structural characteristics were expressed as length frequency histograms and stock density indices (PSD and RSD-P). Fish condition was expressed as mean Wr.

Results and Discussion

New Wall Dam is an important public water body in Eastern Pennington County. Currently, largemouth bass and bluegill are managed as the primary game fish in New Wall Dam while white crappie and yellow perch are managed as secondary game fish. In efforts to improve bass size structure, a 12-inch to 16-inch slot with only one fish over 16 inches included in a daily limit of 5 has been implemented and took effect January 1, 2003. Drought conditions may be overshadowing the effects of this regulation as reproduction and or recruitment has been poor in recent years.

Largemouth bass

During night electrofishing only largemouth bass were sought. Night electrofishing is done annually to evaluate the bass population and protected slot regulation imposed on the bass in New Wall Lake. Extreme low water conditions reduced the amount of shoreline that could be sampled with only 28.7 minutes of electrofishing total. A total of 68 largemouth bass were captured (Table 1). Mean CPUE was 146.3 for all largemouth bass. CPUE for largemouth bass

stock length and longer was 23.6. These values are up from last year's CPUE's of 34.8 and 13.2, respectively. Eleven fish over stock length (200mm) were sampled, compared to 6 last year.

Sample size was so small that stock indices and fish conditions are hard to compare to years past. Length frequency shows a large year class from 2006, hopefully these fish will reach stock length next year (Figure 1). It also appears the drought has effected reproduction and recruitment the last few years. In efforts the bolster the adult population, 150 bass between 6 to 8 inches were stocked this summer. These fish were taken from a stunted population so age and growth was done only on the very small bass (Table 2).

Table 1. Total catch (N), pedal time (seconds), catch per hour of electrofishing (CPUE), mean total length (TL, standard error is given in parentheses), proportional stock densities (PSD, RSD; 90% confidence intervals are given in parentheses) and condition factor (Wr for fish ≥ stock length; 80%CI's) for largemouth bass collected by electrofishing in New Wall Dam, 1999-2007.

Year	N	Pedal Time (sec)	CPUE	CPUE-S	PSD	RSD-P	Wr≥S
1999	183	4,169	158.0 (na)	126.9 (na)	41 (7)	10 (4)	na
2000	105	5,612	67.4 (na)	59.0 (na)	50 (9)	7 (5)	125.5 (1.8)
2001	206	6,960	106 (20.2)	57.7 (12.4)	76 (7)	8 (4)	100.9 (0.1)
2002	204	3,950	184.8 (34.8)	91.4 (16.5)	37 (8)	1 (2)	97.8 (1.1)
2003	172	3,600	172.0 (25.6)	160.0 (24.4)	49 (7)	3 (2)	99.6 (0.4)
2004	96	3,146	108.5 (20.9)	72.8 (10.7)	73 (9)	5 (4)	108.5 (0.2)
2005	45	3,484	45.9 (15.8)	43.7 (15.3)	79 (11)	28(12)	103.0 (1.4)
2006	16	1,700	34.8 (22.0)	13.2 (8.6)	50 (45)	17 (33)	106.1 (5.1)
2007	68	1,719	146.3 (79.6)	23.6 (16.8)	55 (28)	9 (17)	103.3 (5.0)

Table 2. New Wall largemouth bass year class, age in 2007, sample size (N), mean back-calculated total length-at-age, population standard error (SE), and the South Dakota largemouth bass mean length-at-age (Willis et al. 2001).

Year Class	Age	N	Age 1	Age 2
2006	1	52	82	
2005	2	7	80	153
Sample Size		**59**		
2007 Mean (SE)			**81**	**153**
South Dakota Mean			96 (3)	182 (6)

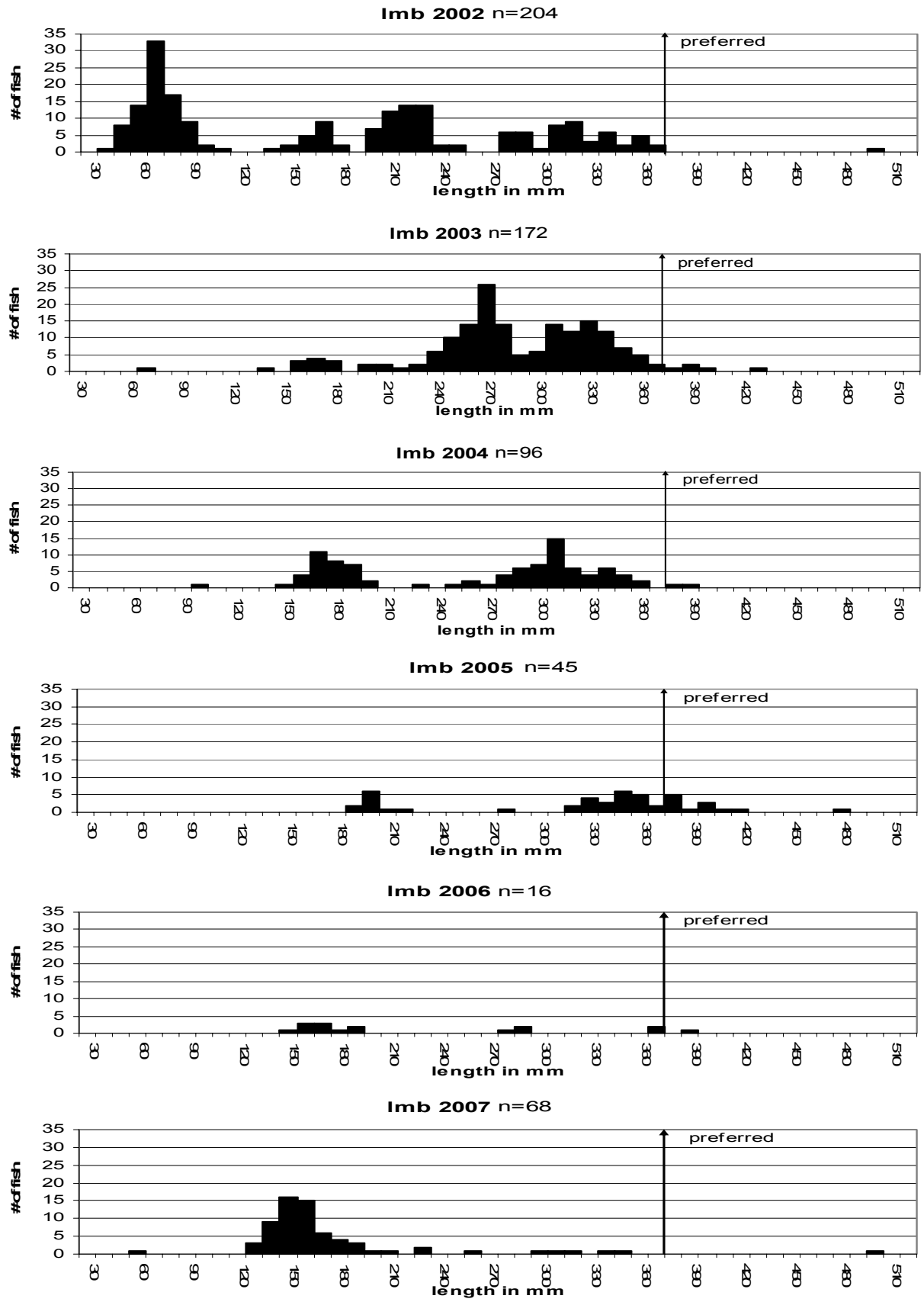

Figure 1. Length frequency histogram for Largemouth Bass at New Wall Dam for 2002-2007 with arrow representing 15 inches.

LITERATURE CITED

Francis, J. 1999. Winfin, Version 2.95; Microsoft Access Program for data entry. Nebraska Game and Parks Commission, Lincoln.

Francis, J. 2000. WinFin Analysis Program. Version 1.5. Nebraska Game and Parks Commission, Lincoln.

Willis, D.W., D.A. Isermann, M.J. Hubers, B.A. Johnson, W.H. Miller, T.R. St. Sauver, J.S. Sorenson, E.G. Unkenholz, and G.A. Wickstrom. 2001. Growth of South Dakota Fishes: A Statewide Summary with means by region and Water Type. Special Report. South Dakota Department of Game, Fish and Parks. Pierre, South Dakota

RECOMMENDATIONS

A. Continue to conduct lake surveys in New Wall Dam on an as needed basis. Conduct electrofishing surveys annually to assess the largemouth bass population.

B. Stock more adult bass when available to bolster adult population until drought conditions subside.

APPENDICES

Appendix A. Stocking record for New Wall Lake, Pennington County, 1994-2007.

Year	Number	Species	Size
1994	4,300	Largemouth bass	Fingerling
1995	400	Walleye	Fingerling
1996	4,300	Largemouth bass	Fingerling
	1,200	Walleye	Fingerling
1997	4,300	Largemouth bass	Fingerling
1998	4,300	Largemouth bass	Fingerling
1999	3,000	Largemouth bass	Fingerling
2001	18	Black crappie	Adult
	50	Bluegill	Adult
2007	150	Largemouth bass	Adult